CHAPTER 7

Design Patent Drawings

This chapter details the specific requirements of formal design patent drawings. Refer to Chapter 5 for a discussion of formal and informal drawings and design patent drawings. Also refer to *Patent It Yourself*, Chapter 1, for details on design patents, including the types of inventions that qualify for them, and Chapter 10 for how to prepare the written portion of a design patent application.

Amount of Detail Required

Unlike a utility patent, which covers the structure or composition of useful devices or useful processes, a design patent covers the specific ornamental appearance of an object, which is solely defined by the drawings. Therefore, design patent drawings must accurately illustrate the object's shape, proportions, surface contours, and any special material properties or textures. The drawings must show every feature of the object that is visible during normal use, so that no part of it is left to conjecture. They must be shaded to depict surface contour or characteristics, such as transparency, and to distinguish between open and solid areas. If the drawings depict the object inaccurately—for example, if they show incorrect proportions, contours, or other details—the resulting patent may end up protecting the wrong shape. Therefore, it is extremely important that the drawings be accurate in depicting the shape you wish to monopolize.

Show Idealized Form

If you have made a rough mock-up of your design that is not visually identical to the design you wish to patent, you should show the object in its idealized form in the patent drawings. You can apply for a patent on a design even if you have not made a model. Therefore, even if you have made a model, the drawings may be idealized as much as you wish, without regard to the appearance of the model. The important thing is to show the object accurately in its ideal form.

CAUTION

Drawings cannot be changed after filing. Because of the proscription against adding new matter to any patent application, the appearance of a design invention cannot be changed after filing, not even slightly. Therefore, features cannot be added to or removed from design drawings. However, if a feature was described in the original application as not being part of the invention, or if the feature was shown in dashed lines (which are used to illustrate features that are not part of the invention; see below) in the original drawings, it may be removed if desired. See Chapter 9 for details on the rules regarding changing drawings.

Views Required

A design patent application must provide a complete set of views from all sides. This is usually accomplished with the six standard views, including orthogonal front, back, right, left, top, and bottom views (this requirement does not apply to utility patent drawings).

The entire design must be shown in each of these views. One or more perspective views, perhaps one front and one back, should also be included if the orthogonal views do not clearly illustrate the invention. The angle of the perspective view should be carefully selected to maximize comprehension. Note that there are no reference numbers like those typically used in utility patent drawings, because reference numbers are not allowed in design patent drawings. (See Chapter 1 for details on orthogonal and perspective views.)

As shown in the drawings of a computer mouse in Illustrations 7.1 and 7.1a, Fig. 1 is a rear perspective view, Fig. 2 is a top orthogonal view, Fig. 3 is a rear orthogonal view, Fig. 4 is a left side orthogonal view, Fig. 5 is a front orthogonal view, Fig. 6 is a right side orthogonal view, Fig. 7 is a bottom orthogonal view, Fig. 8 is a front perspective view, and Fig. 9 is a left perspective view. Although several perspective views are used in this illustration, one is usually enough for simple designs, such as the mouse. However, designs that are very complicated or difficult to understand should have as many perspective views as necessary.

Exceptions to the Rule

There are a few exceptions to the use of six standard views:

- Any view that is duplicative of another need not be shown. For example, if a design has identical or symmetrical right and left sides, then only one side need be shown. The description of the figures in the specification should note such fact. For example, "Fig. 3 is a right side view of the wheel; the left side view is a mirror image of the right side."
- A view of any side of a design that is plain and unornamented, such as the flat bottom of a lamp base, may be omitted. The description of the figures in the specification should note such fact. For example, "The lamp includes a plain and unornamented bottom, which is not shown."
- A thin and flat object, such as fabric or embossed designs, would require only front and rear views. Again, the description should note such fact. For example, "The design is a thin and flat sheet; therefore only front and rear views are shown."

Consistency of Views

The appearance of the design must be consistent throughout the different views. That is, there must be no discrepancies between the views in the appearance of any element in the design. For example, a design for a computer housing must not be shown with a round button in one view and a square button in another view. All details must match.

Drawings Must Show All Features

Design patent drawings must show every part of the design that is visible during normal use; the only exceptions are listed above. If a design includes novel aesthetic features that are visible during normal use, but which cannot be illustrated by the standard views discussed above—for example, interior surfaces—the following views may be used in addition to the standard views.

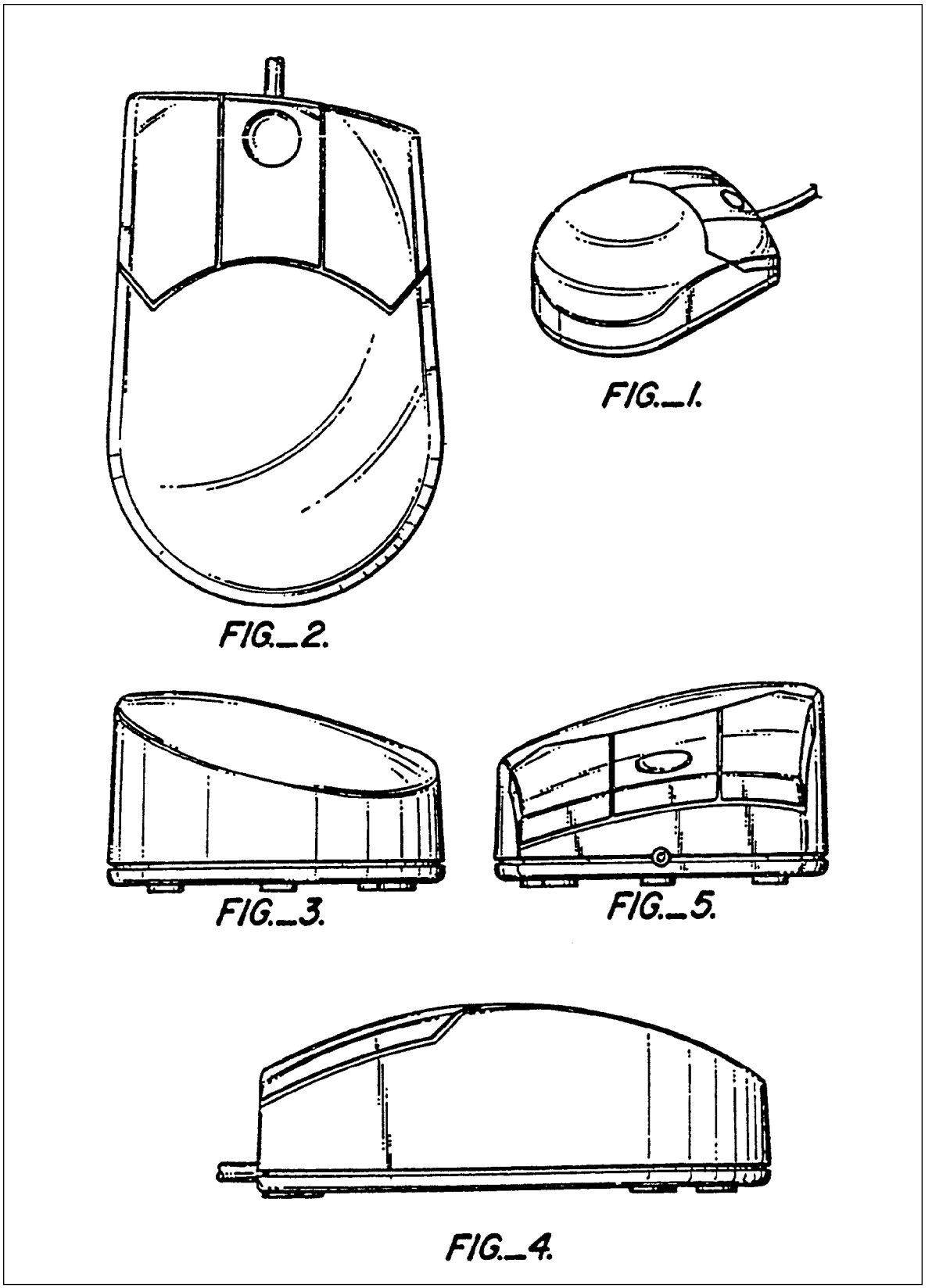


Illustration 7.1—Views Required

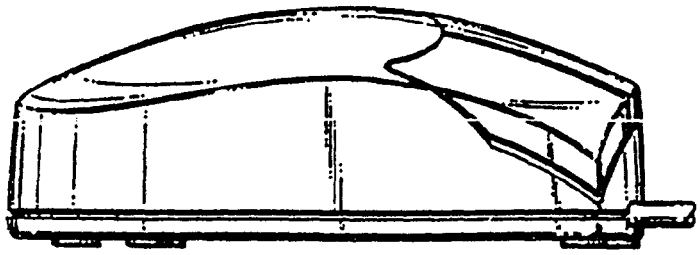


FIG._6.

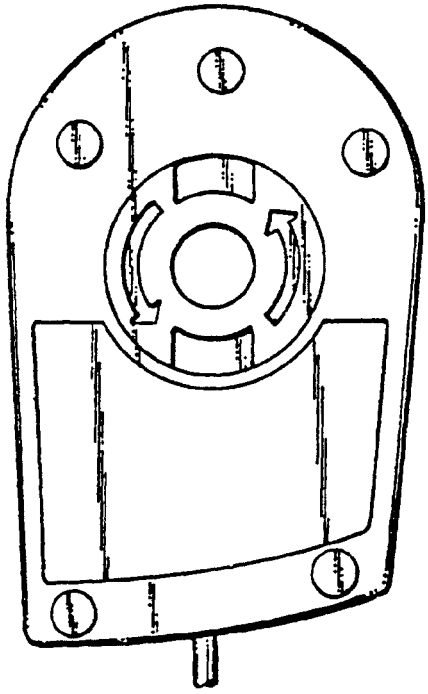


FIG._7.

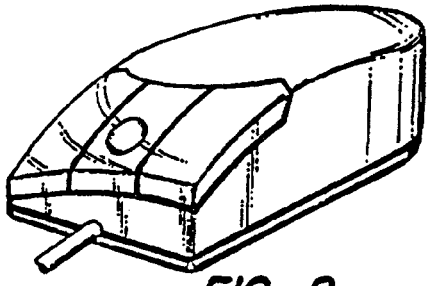


FIG._8.

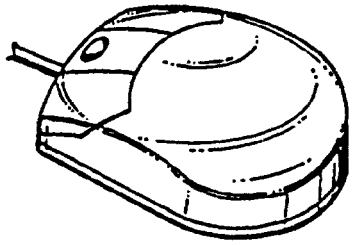


FIG._9.

Illustration 7.1(a)—Views Required (continued)

Sectional View

As shown in Illustration 7.2, in addition to the standard views (only two shown here), a glass cover is shown in Fig. 3 in a sectional view sliced in half to illustrate its ornamental internal contour. The sectional view is necessary in this case, because the internal contour of the cover would not be clear from a bottom view, which is also required, but not shown here. A broken line with arrows must be placed on a general view (a suitable nonsectional view), such as Fig. 2 in Illustration 7.2, to indicate the sectioning plane and view direction. The number of the figure that shows the sectional view should be placed adjacent to the arrows, as shown in Fig 2. See Chapter 6 for details on sectional views.

Exploded View

A design object with parts that are separable during normal use may have such parts shown separated, and independently positioned as necessary to show their internal design features, such as Fig. 2 in Illustration 7.3. In such an exploded view, a bracket must be used to "enclose" or connect the parts that belong to the same figure. Projection lines (dashed lines connecting separated parts) should not be used in design drawings. Again, in addition to the exploded view, the object must also be shown assembled in the standard views, such as Fig. 1. (Other standard views, as discussed above, are also required, but they are not shown in Illustration 7.3.)

Parts Shown Separately

Normally separable parts may also be illustrated in separate figures to show their interior design features. In Illustration 7.4, the dish and lid are shown assembled together in Fig. 1, and the dish is shown alone in Fig. 2 to illustrate its contour that is normally covered by the lid. The description of the figures should state the fact that a part is shown separately. For example, "Fig. 1 is a front perspective view of a dish with lid showing my new design. Fig. 2 is a front perspective view of the dish, shown without the lid to illustrate interior ornamental features." Again, as discussed above, the entire object must also be shown assembled in the other normally required views (not shown here).

Caution About Purely Functional Parts

In design patent drawings, sectional or exploded views cannot be used to show purely functional internal features that are without any aesthetic value, such as working mechanisms. Of course, if an internal functional part has an ornamental shape—for example, a stylized engine in an automobile—it may properly be shown.

Parts Behind Transparent Surfaces

Any part that is visible behind a transparent surface should be shown in solid (rather than hidden or dashed) lines, just as it would be seen in real life. The lines representing such parts should be thinner than the other lines, to distinguish them, such as in Illustration 7.5.

Movable Parts

Movable parts cannot be shown in alternate positions in design patent drawings in the same figures, but they can be shown in separate figures. If a design object has normally separable parts, use sectional or exploded views, as discussed above.

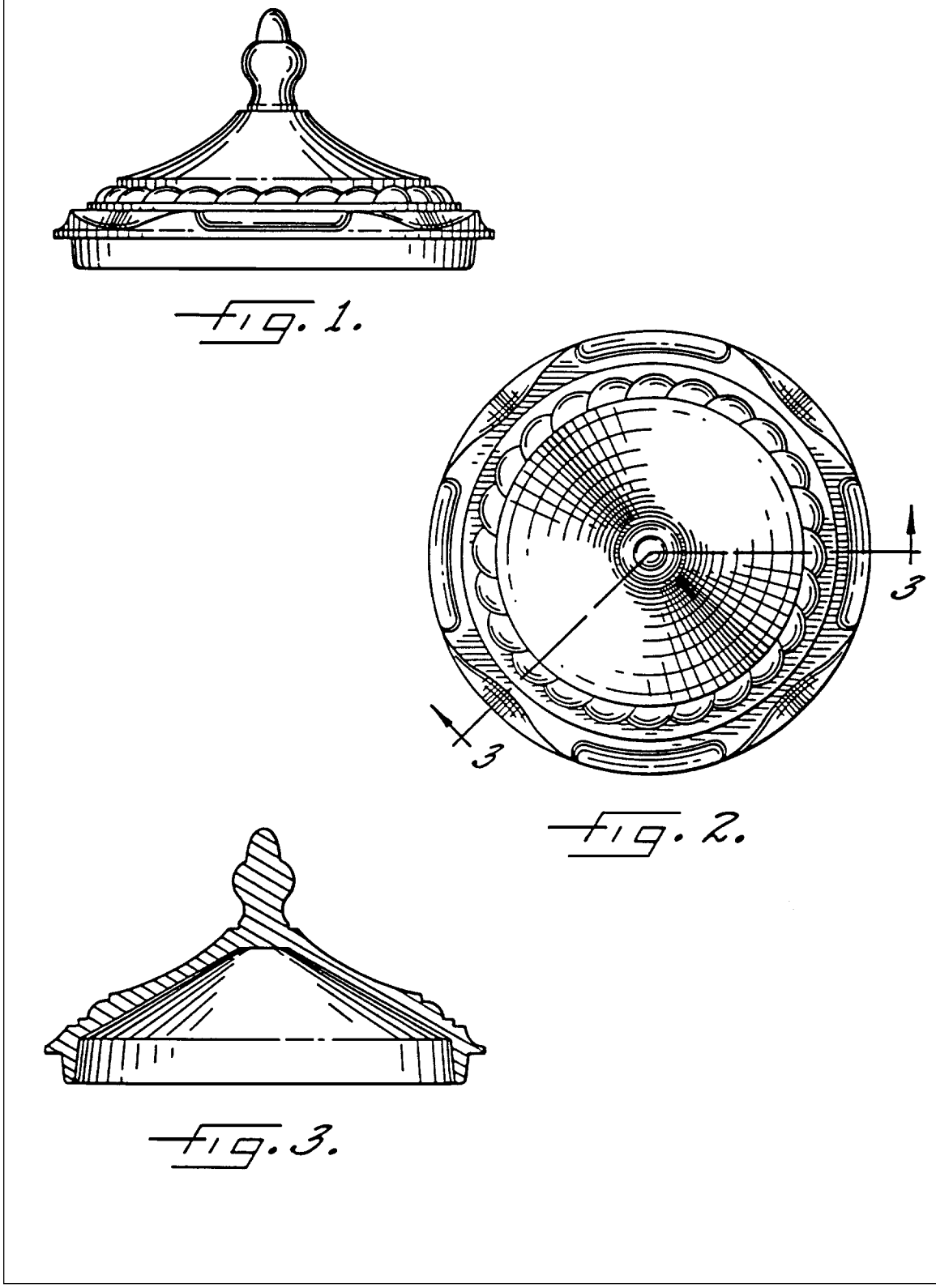


Illustration 7.2—Sectional View

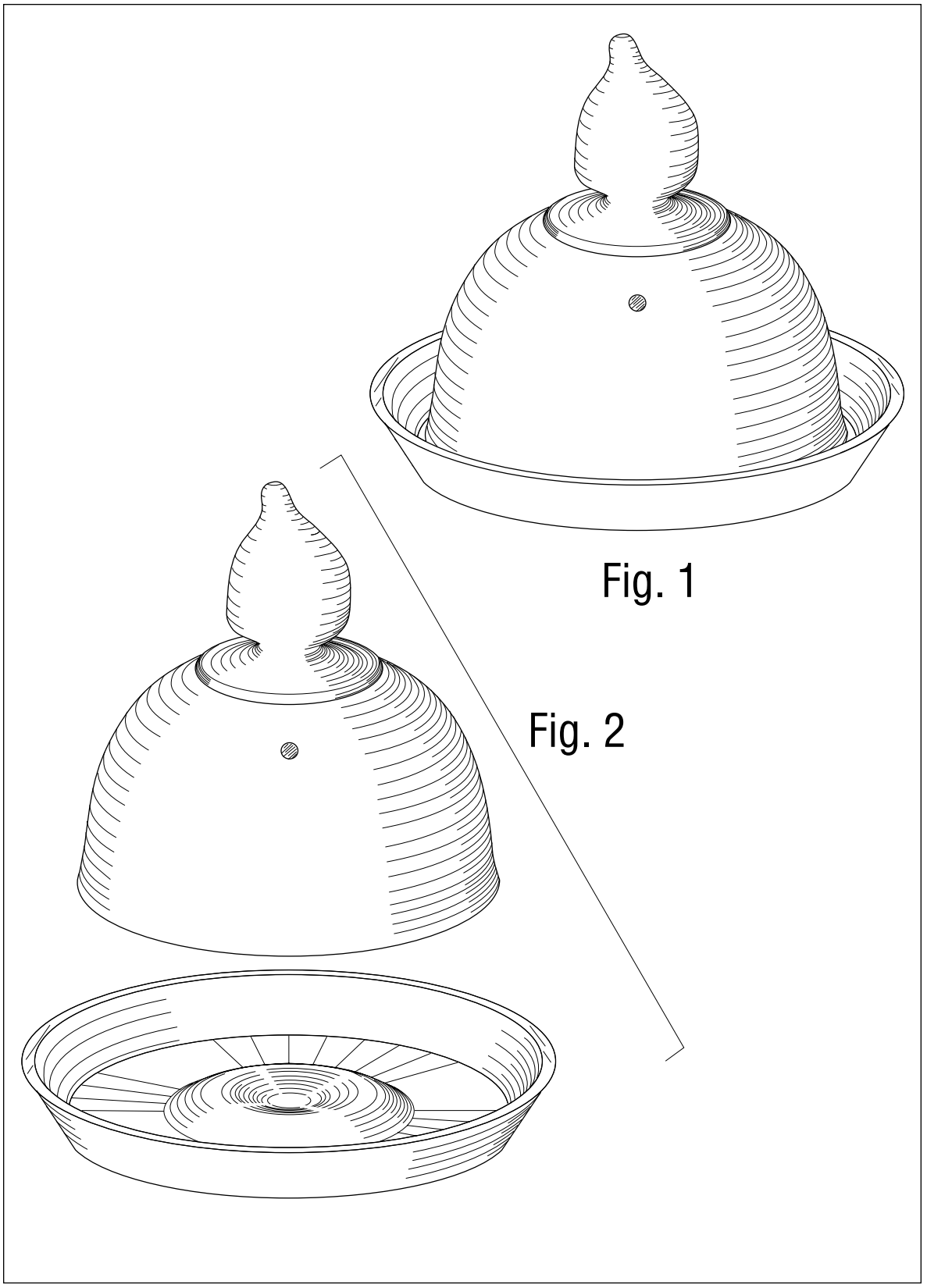


Illustration 7.3—Exploded View

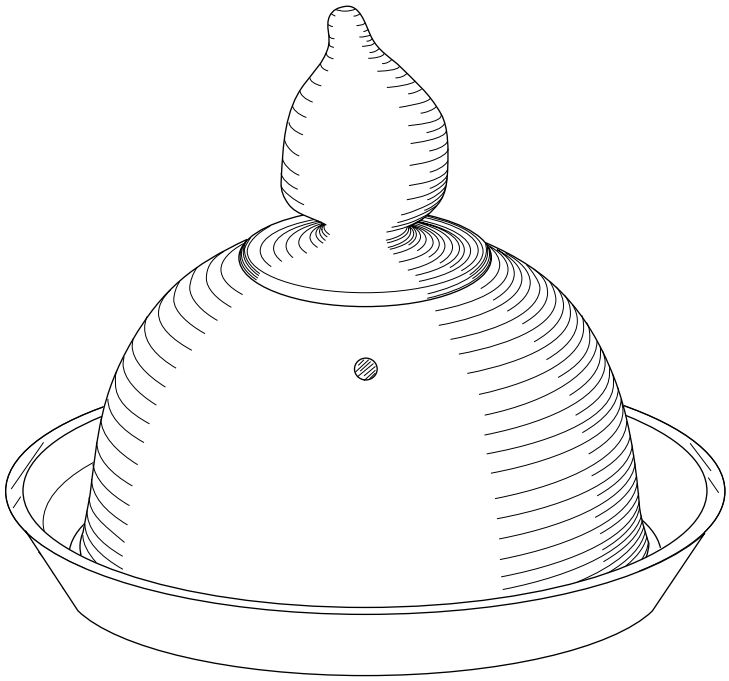


Fig. 1

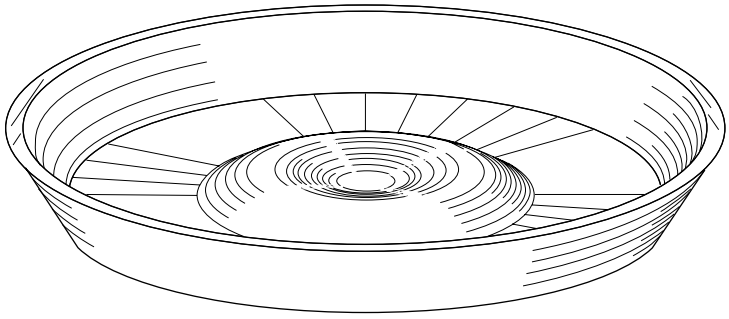


Fig. 2

Illustration 7.4—Separable Parts Shown Separately

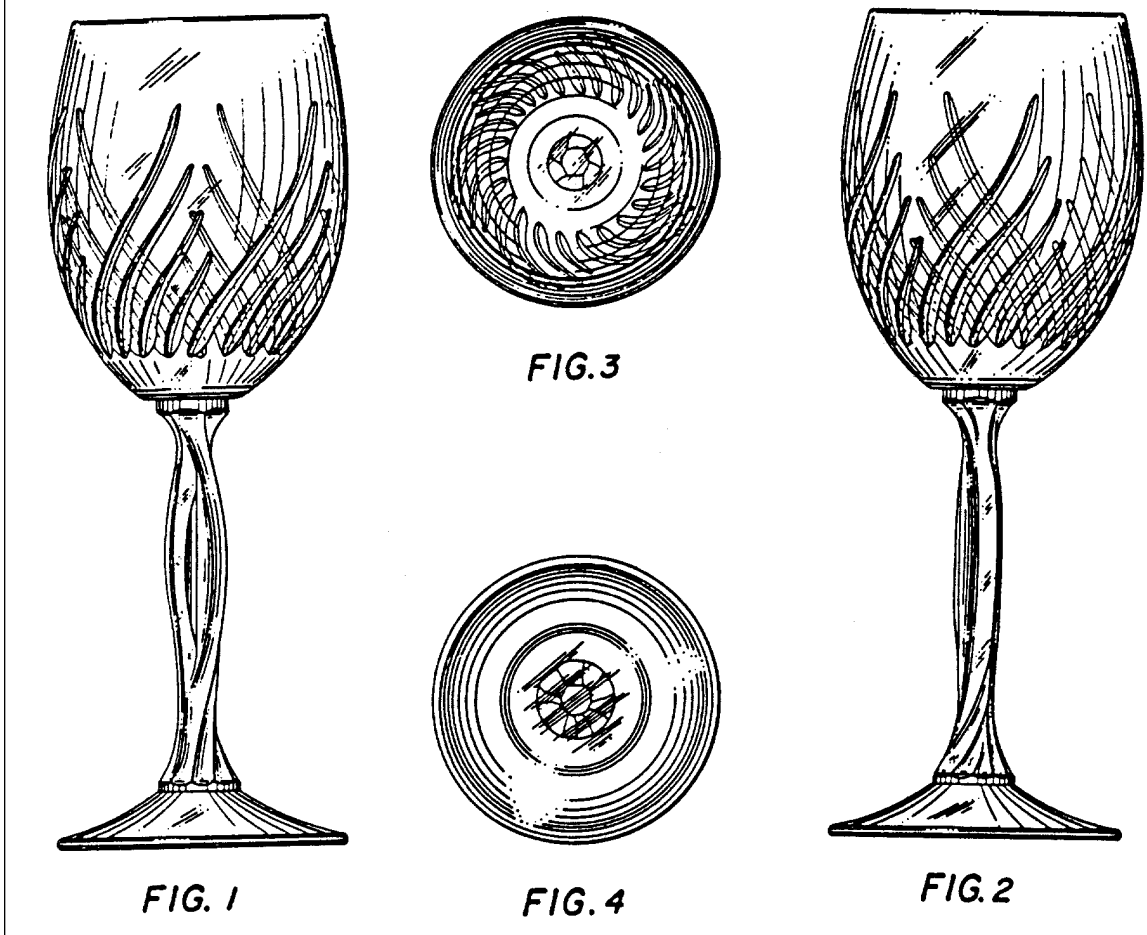


Illustration 7.5—Transparent Objects

Surface Markings

Surface markings, such as labels and logos, may be shown in continuous lines in the drawings. As discussed above, anything shown in continuous lines will be considered part of the invention. Therefore, you must consider whether such markings are an integral part of your invention before they are included. If a marking is simply one of different possible variations, such as the time displayed on a digital clock, then such marking should be shown in dashed lines. (See Chapter 8 for details on dashed lines.) If a marking is intended to be merely an example, it should be noted in the description of the figures. For example, "The marking shown in Fig. 1 is merely exemplary." You may simply omit a marking if it is not an important part of your design.

Unclaimed Matter

Any element shown in continuous lines is considered as part of an invention, whereas any element shown in dashed or phantom lines (see Chapter 8 for details on dashed and phantom lines) is not considered to be part of the invention. Therefore, do not use dashed or phantom lines unless they represent elements that you do not wish the patent to cover (unclaimed matter)—for example, a background setting or person using the design.

In the telephone design shown in Illustration 7.6, the base unit is shown in continuous lines and the handset is shown in dashed lines. The base unit is covered by the patent, but the handset is not. The handset is shown merely to convey the design more clearly, but is actually unnecessary, because the base unit is clearly recognizable as such without it. Elements in dashed or phantom lines should be shown only when they are absolutely necessary to clearly convey the design.

Shading Techniques

Shading is the representation of surface contour and texture, and is a very important part of design patent drawings. If a drawing is filed without shading, or with inadequate shading, the examiner will object to the drawings and require you to provide new, corrected drawings. The PTO will accept new drawings that correct minor shading problems, as long as such problems do not cause significant ambiguity in the appearance of the invention. See Illustration 6.33 in Chapter 6 for an example of ambiguity caused by the lack of shading.

If shading, or its absence, causes enough ambiguity, the examiner may reject the design application as being based on inaccurate drawings. (See Chapter 9 for details on rejections by the PTO.) Such a rejection usually cannot be overcome, because it is not permissible to add any new matter (information) to an application after filing, including shading that substantially affects the shape of the design. Therefore, you must make sure that the drawings as filed clearly depict every feature of your design, including any surface contour or texture that must be illustrated by shading. Other than on the design object, shading must not be applied to anything else on the drawing, such as the background.

Linear and Stippled Shading

The shading should be applied as if the light source is to the upper left of the drawing, so that the shadows are on the right and bottom sides. The two conventionally accepted types of shading are linear and stippled. Linear shading uses parallel lines—either continuous or broken—as shown in Illustration 7.7 and Illustration 7.8, whereas stippled shading uses tiny dots, as shown in Illustration 7.9. Either type of shading is acceptable to the PTO, so

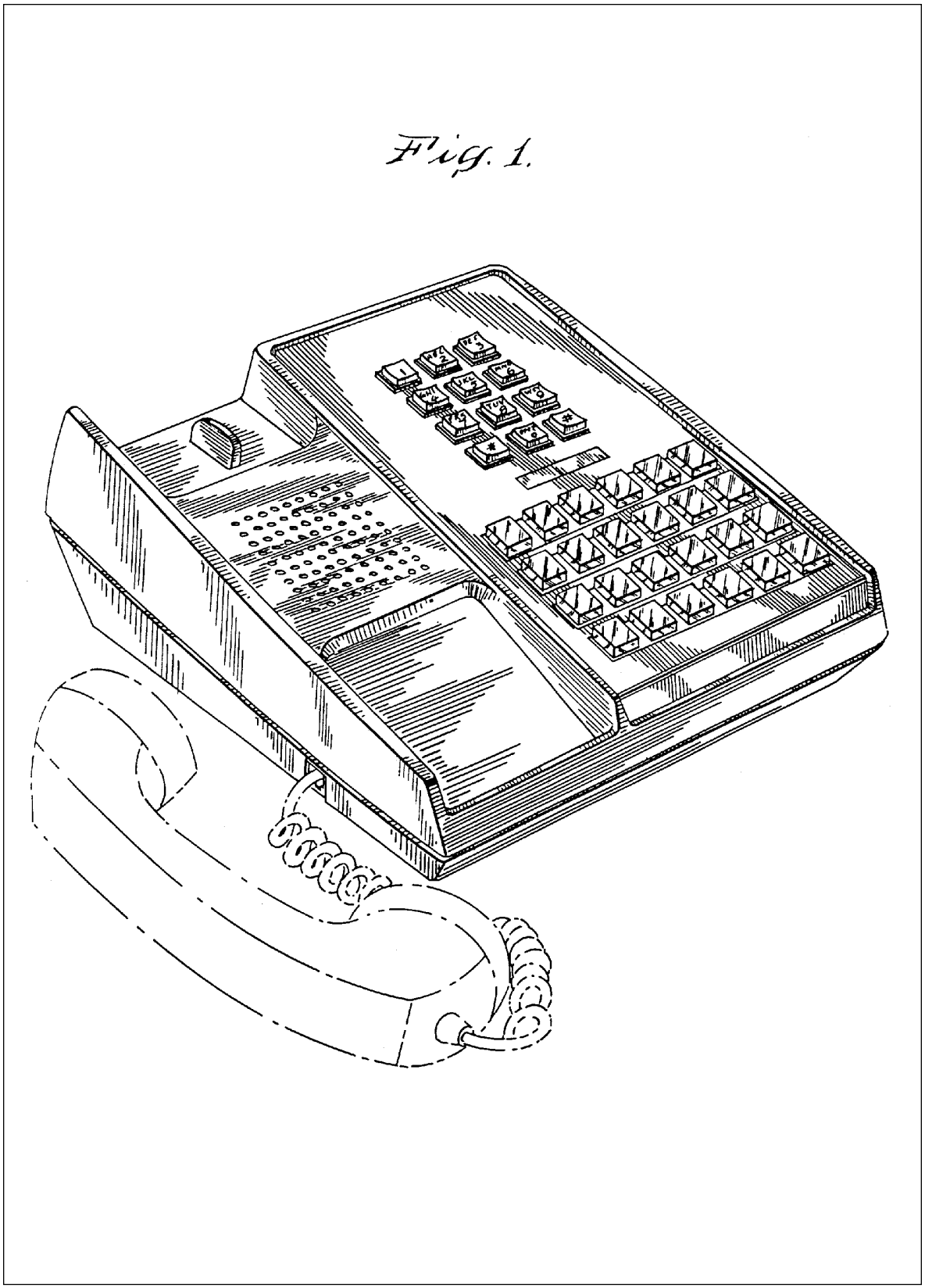


Illustration 7.6—Unclaimed Matter

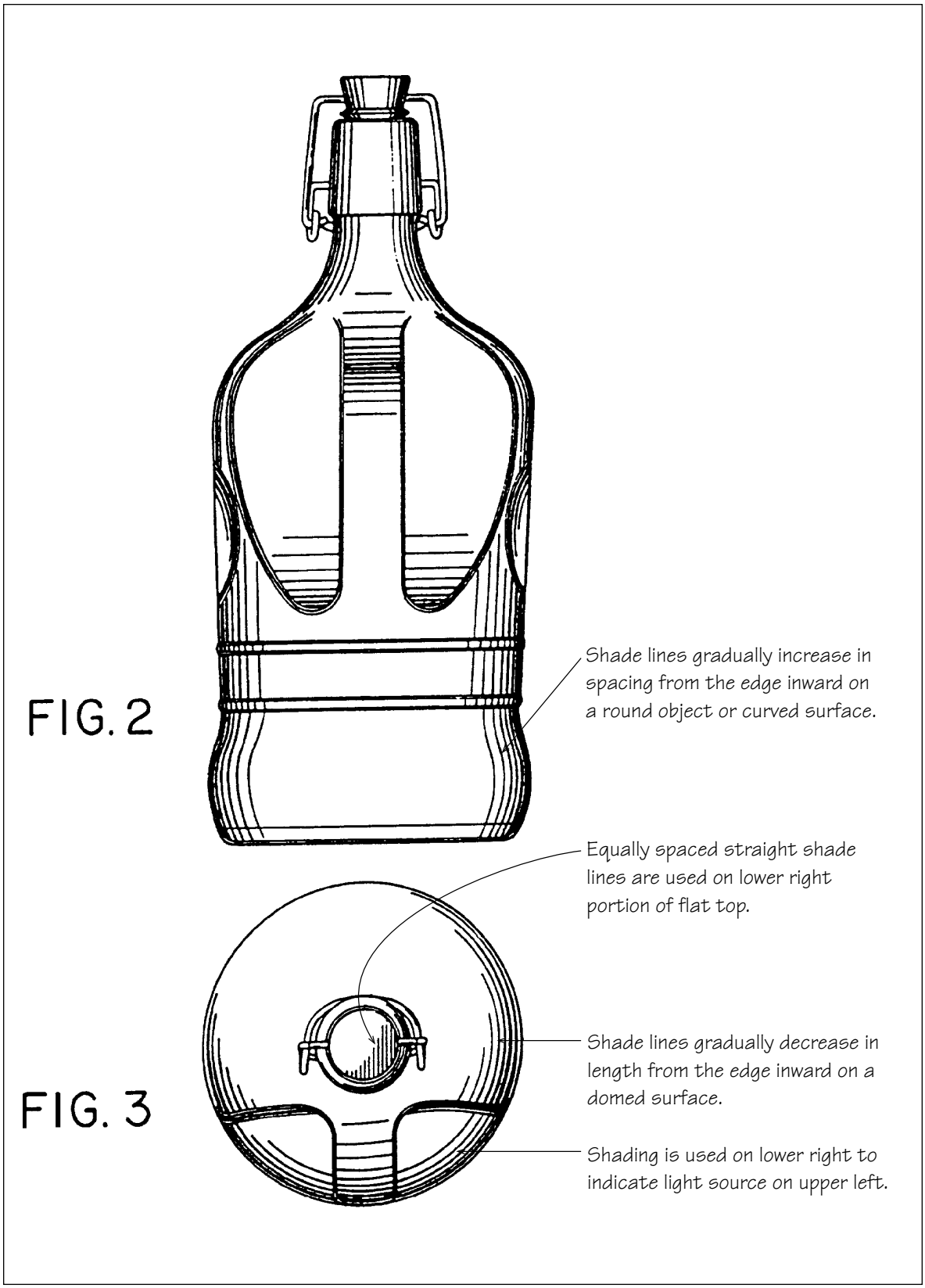


Illustration 7.7—Linear Shading

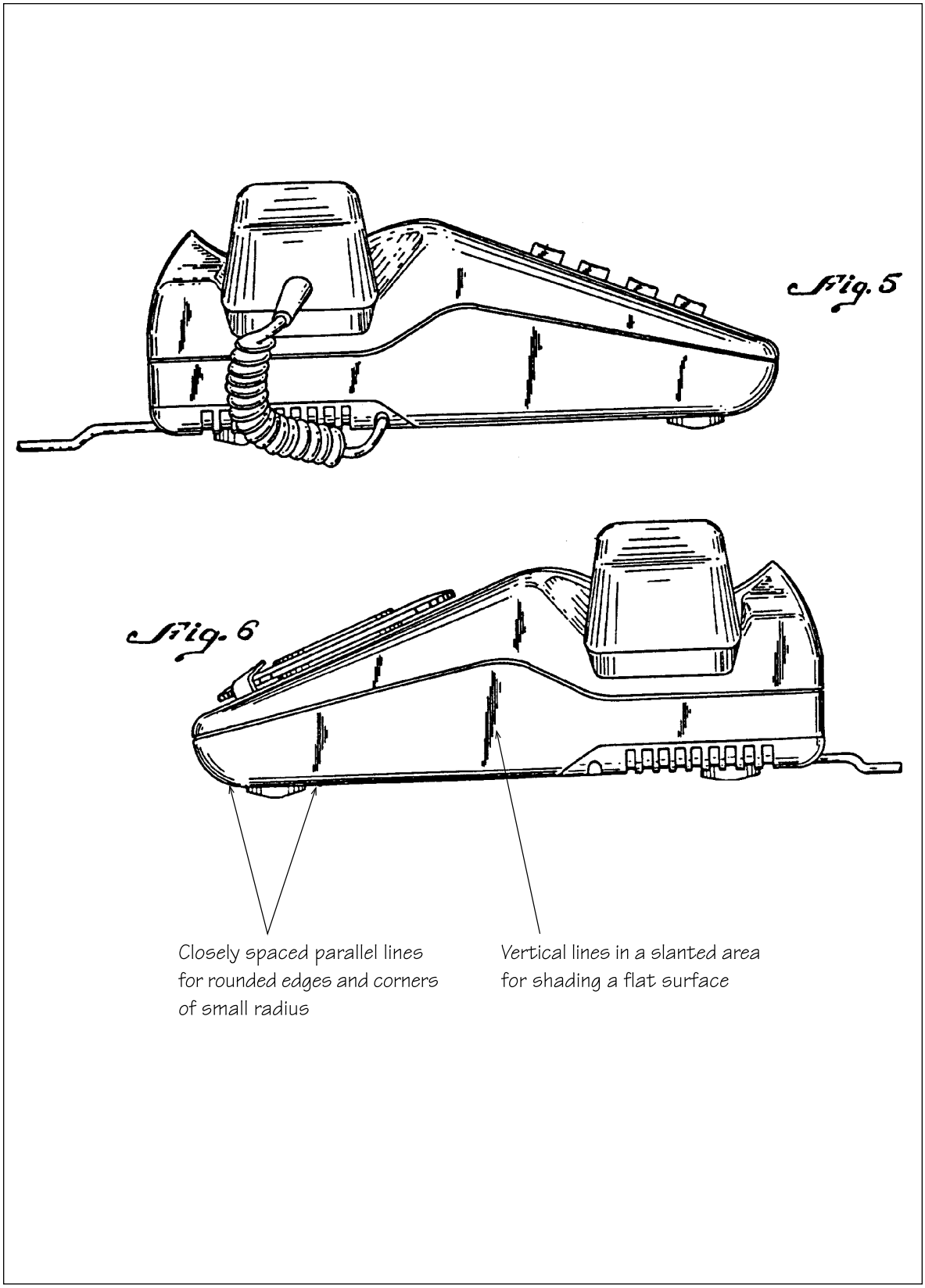


Illustration 7.8—Linear Shading

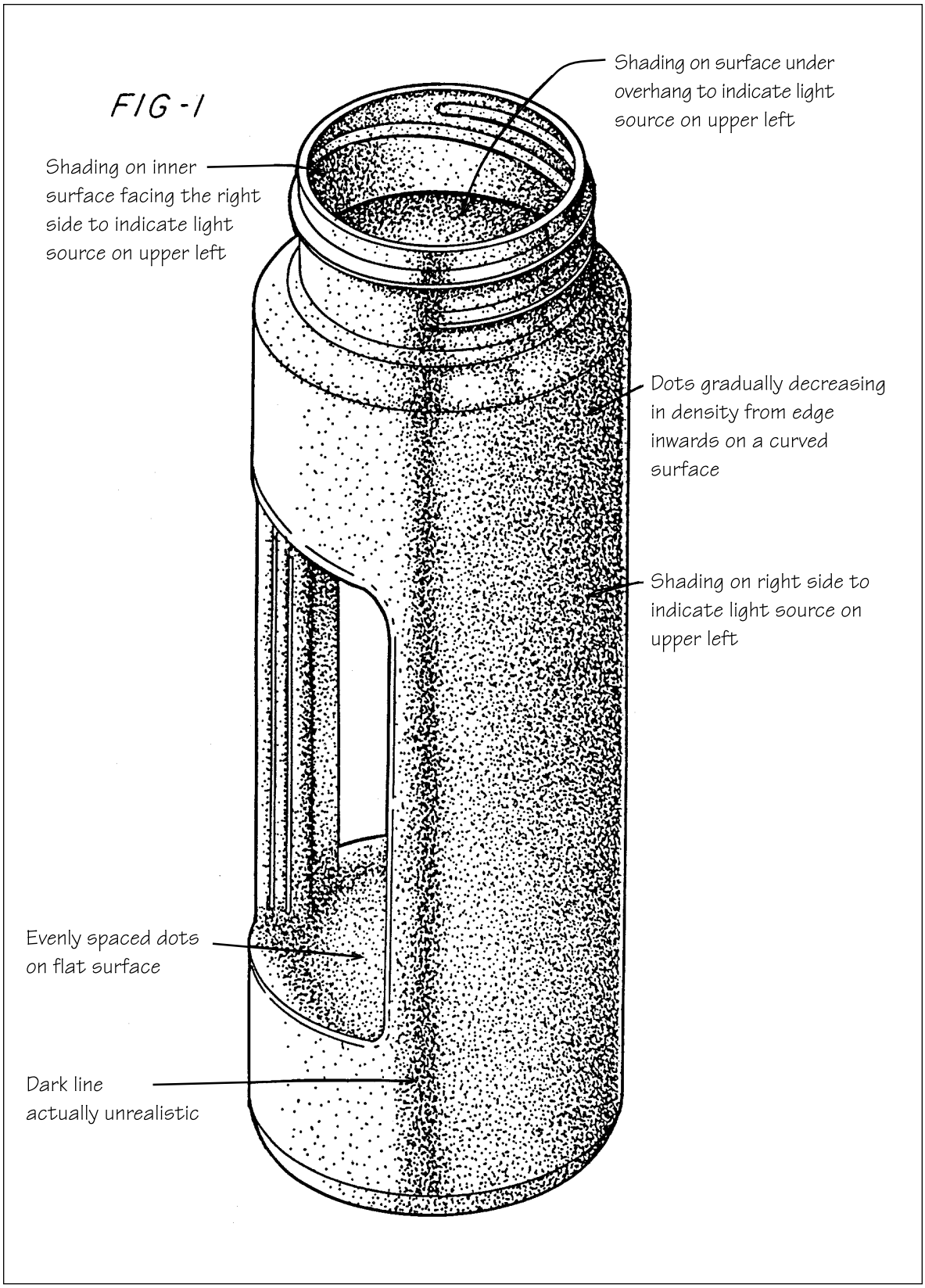


Illustration 7.9—Stippled Shading

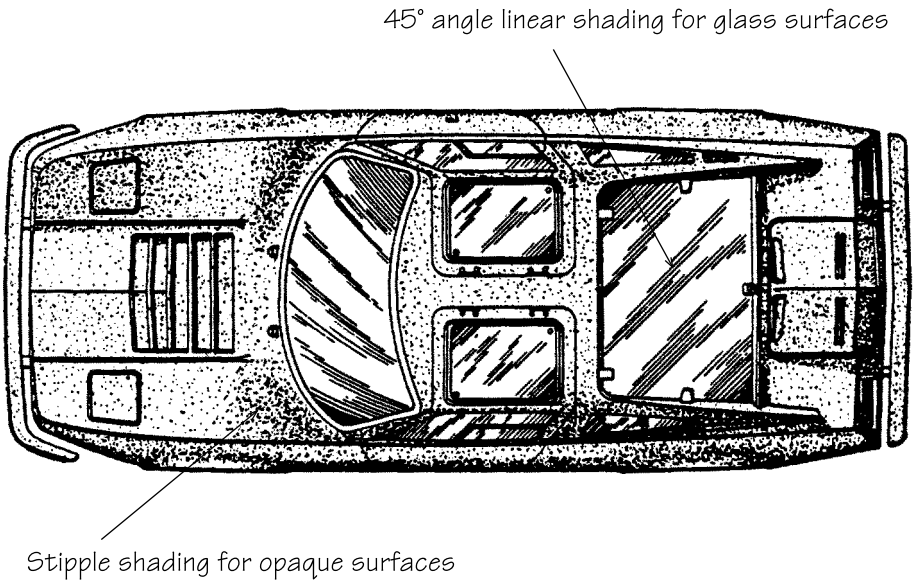


Illustration 7.10—Combined Stippled and Linear Shading

choose the one you prefer. The techniques for applying shading in specific situations are discussed in the illustrations.

Stipple shading is normally used for representing shadows—that is, surface contour—but it may also be used for representing rough textures, such as foam, coarse fabric, or concrete. Linear shading is preferably used for depicting transparent or shiny surfaces, such as glass or polished metal. Linear and stippled shading can be combined in a drawing and used wherever suitable. For example, the body of a car can be stipple shaded, and its glass can be linear shaded, such as in Illustration 7.10. Solid black shading is not allowed, except to depict a solid black color when color is an important design feature, such as on a paint scheme of a racing car. (See below for details on the representation of color.)

Computer-Generated Shading

An illustration of a wire frame model created by a 3D CAD (computer-aided drafting) program is shown in Illustration 7.11. Most 3D CAD programs automatically apply graduated shading to a wire frame model to make it appear solid, as shown in Illustration 7.12 (2D CAD programs do not automatically apply shading). The model can be rotated to different angles and shaded again. Lines can be overlaid on the shaded illustration, as shown in Illustration 7.13. The shaded renderings can be filed as informal drawings for a design application to show the contours of the invention. Formal drawings with linear or stippled shading (see Illustrations 7.8 and 7.9) have to be filed when an application is approved. Currently no computer program can automatically apply linear or stippled shading.

Representation of Color and Material

If the novel features of your design include colors, materials, or ornamental effects that cannot be illustrated by black line drawings, color drawings or photographs may be filed with a petition and a petition fee. If the petition is not granted, they must be replaced with black line drawings. See Chapter 8 for details on such petitions. If you must resubmit drawings, it is possible that some features may change when you convert from color to black and white. If the result is new matter, the examiner will object to the line drawings. Such an objection can be avoided by filing black line drawings and color with the original application to represent colors and materials whenever possible. The standard hatch patterns shown in Illustration 7.14 can be used to represent simple solid colors.

Illustration 7.15 shows a unique color scheme on a truck; the colors are represented by hatch patterns. The patterns are applied without regard to the object's surface contour, such as in Illustration 7.16, where the lines of the patterns are drawn straight even on a curved object. The patterns representing materials are applied in a similar way. This may seem to be a very inefficient way to represent colors, but it is necessary, because patents are printed only in black ink to minimize cost, and a color drawing or photograph converted into black and white by a photocopier usually becomes very difficult to understand.

When such patterns are used, the description of the drawings must state such fact. For example, "The drawings include standard drafting symbol patterns for representing color." If the particular colors indicated in the drawings are merely exemplary, the description of the figures should state such fact. For

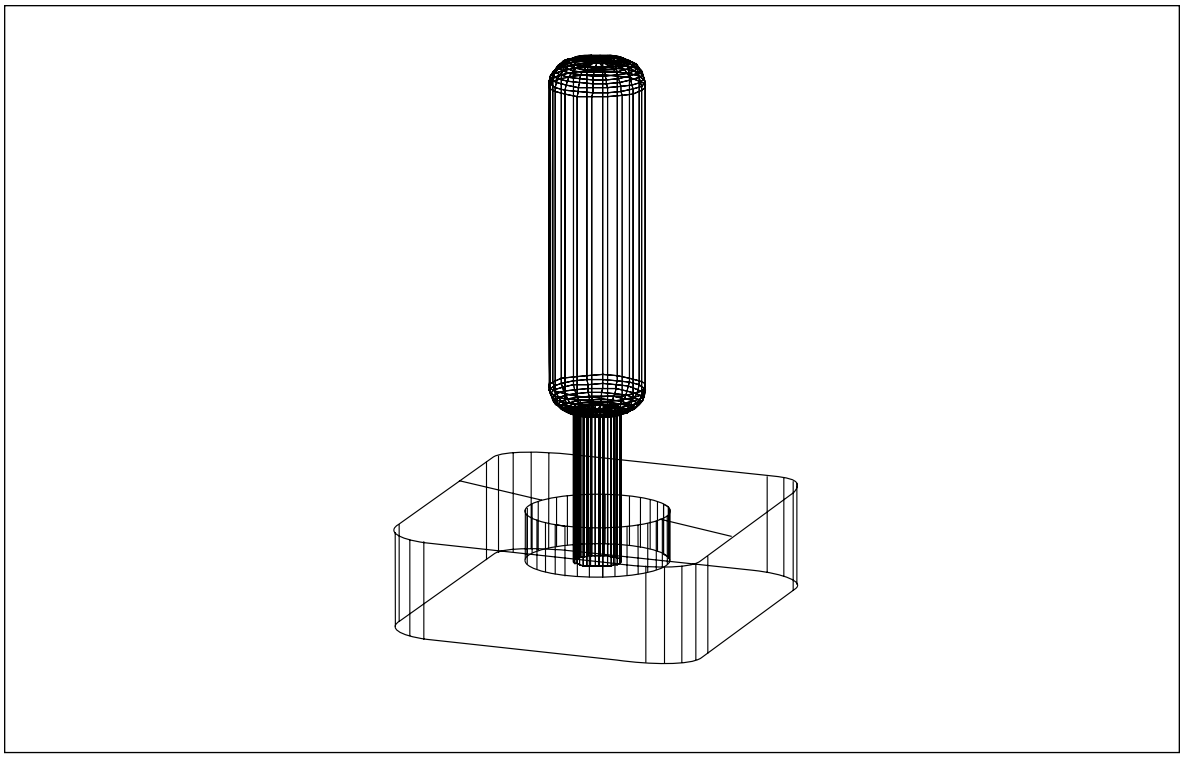


Illustration 7.11—Wire Frame 3D Model

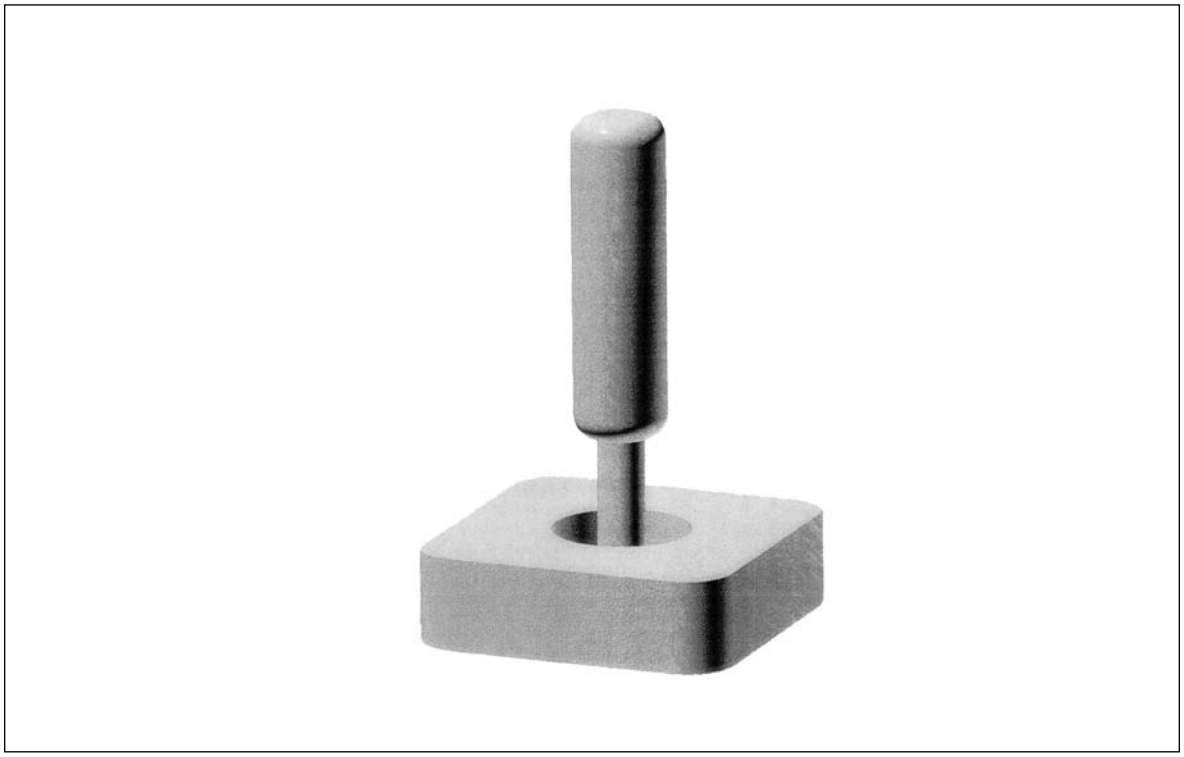


Illustration 7.12—Shaded 3D Model

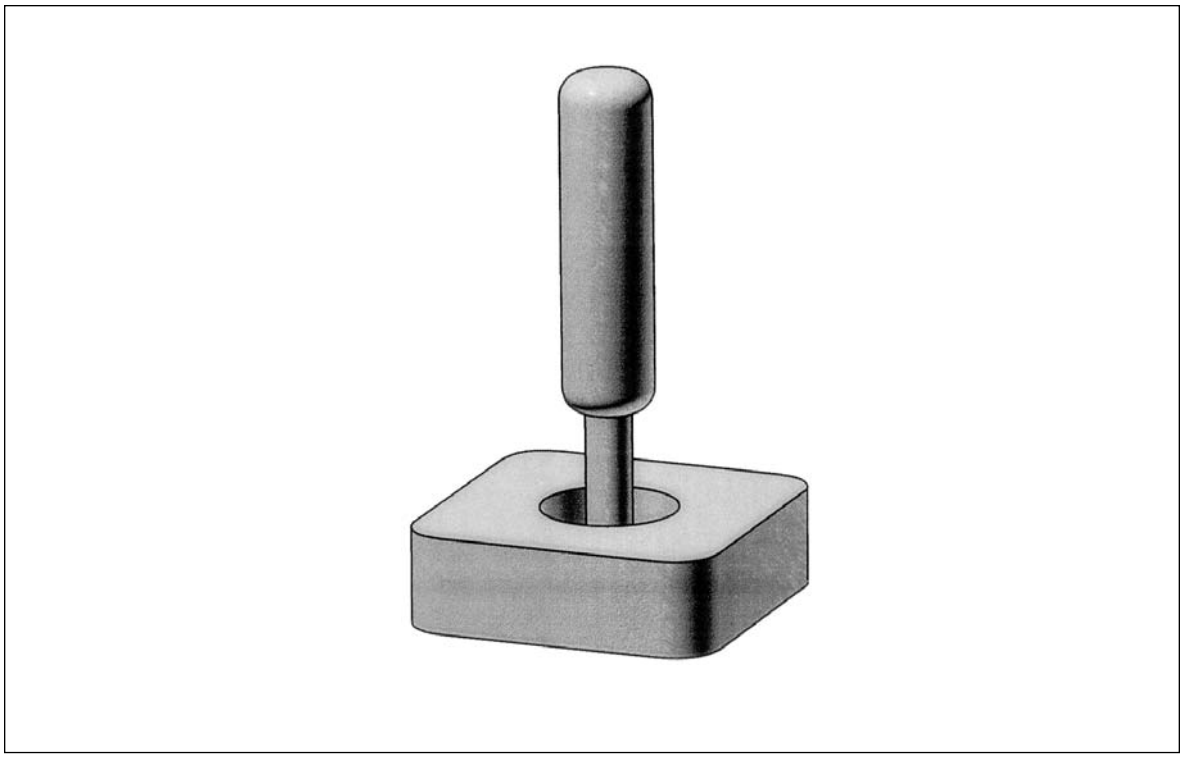


Illustration 7.13—Shaded 3D Model Overlaid With Lines

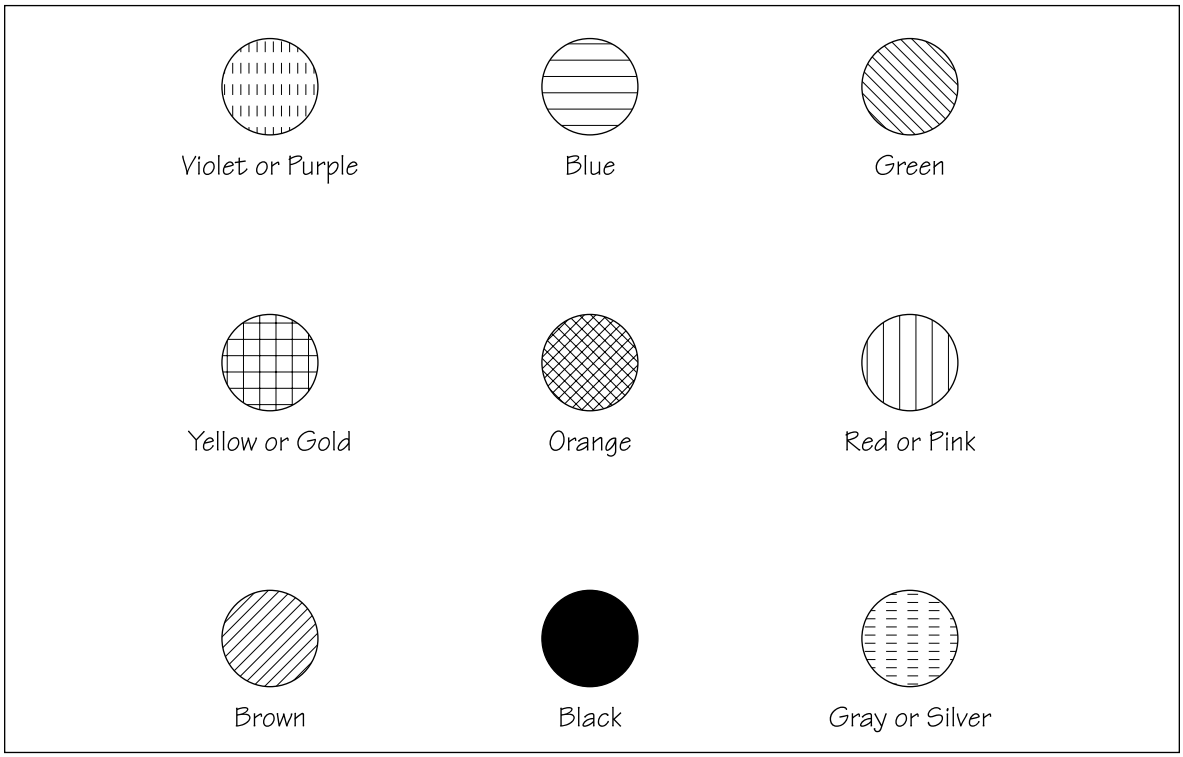


Illustration 7.14—Patterns for Representing Color

Fig. 2.

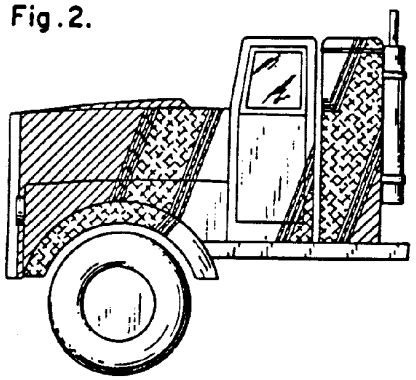


Fig. 1.

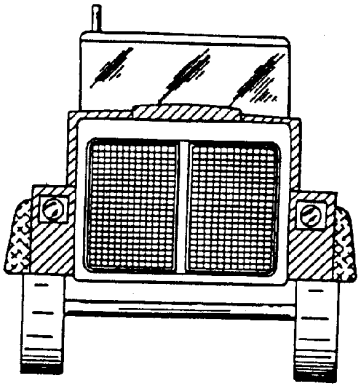


Fig. 3.

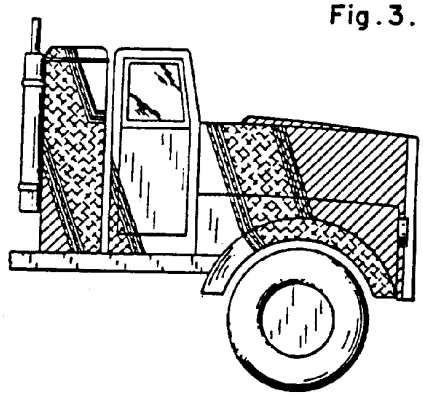


Fig. 4.

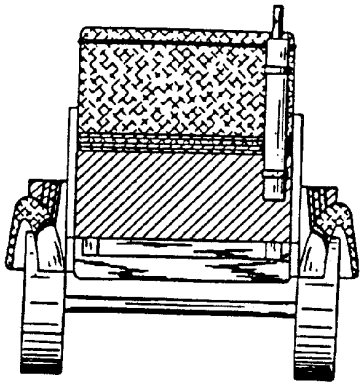


Fig. 5.

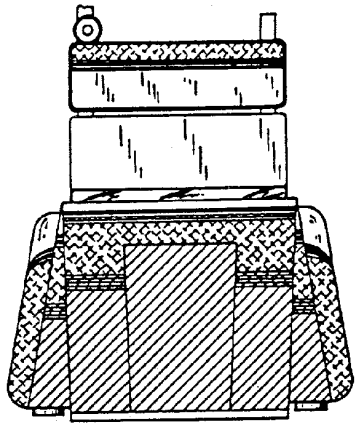
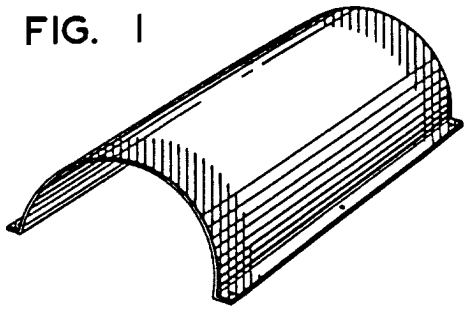


Illustration 7.15—Hatch Patterns Representing Color Scheme

FIG. 1



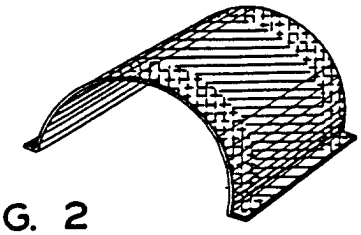
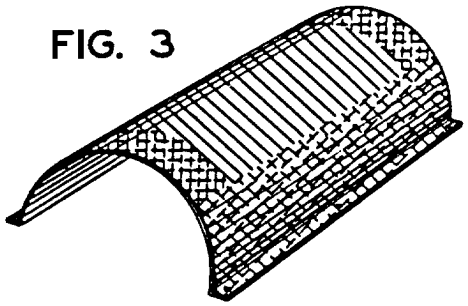


FIG. 2

FIG. 3



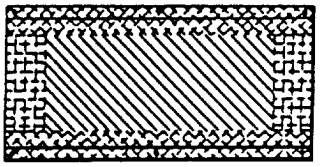


FIG. 4

Illustration 7.16—Hatch Patterns Representing Color Scheme

example, "The colors on the wheel are not limited to those specifically indicated in the drawings." Note that these special patterns are not necessary if the colors or materials of your design are unimportant.

Line Types

For design drawings done in black lines, such as in Illustration 7.17, suitable line types and widths are as follows:

- Edge lines (lines representing edges) of an invention must be continuous lines. They should be about 0.2 to 0.3 mm thick. Use 0.3 mm lines for edge lines in sectional views. Never use dashed or phantom lines for the design.
- Environmental structures and exemplary surface markings must be dashed or phantom lines. They should be no thicker than the lines representing the design.
- Shading for opaque surfaces should be parallel continuous lines, broken lines, or dots. They should be about 0.1 to 0.2 mm thick, and thinner than the edge lines. They should be oriented vertically or horizontally with respect to the object. In computer-generated shading, as described above, the dot sizes are not directly controllable.
- Shading for transparent or translucent surfaces should be parallel continuous or broken lines. They should be about 0.1 to 0.2 mm thick, and thinner than the edge lines. They should be oriented obliquely (slanted) with respect to the object.

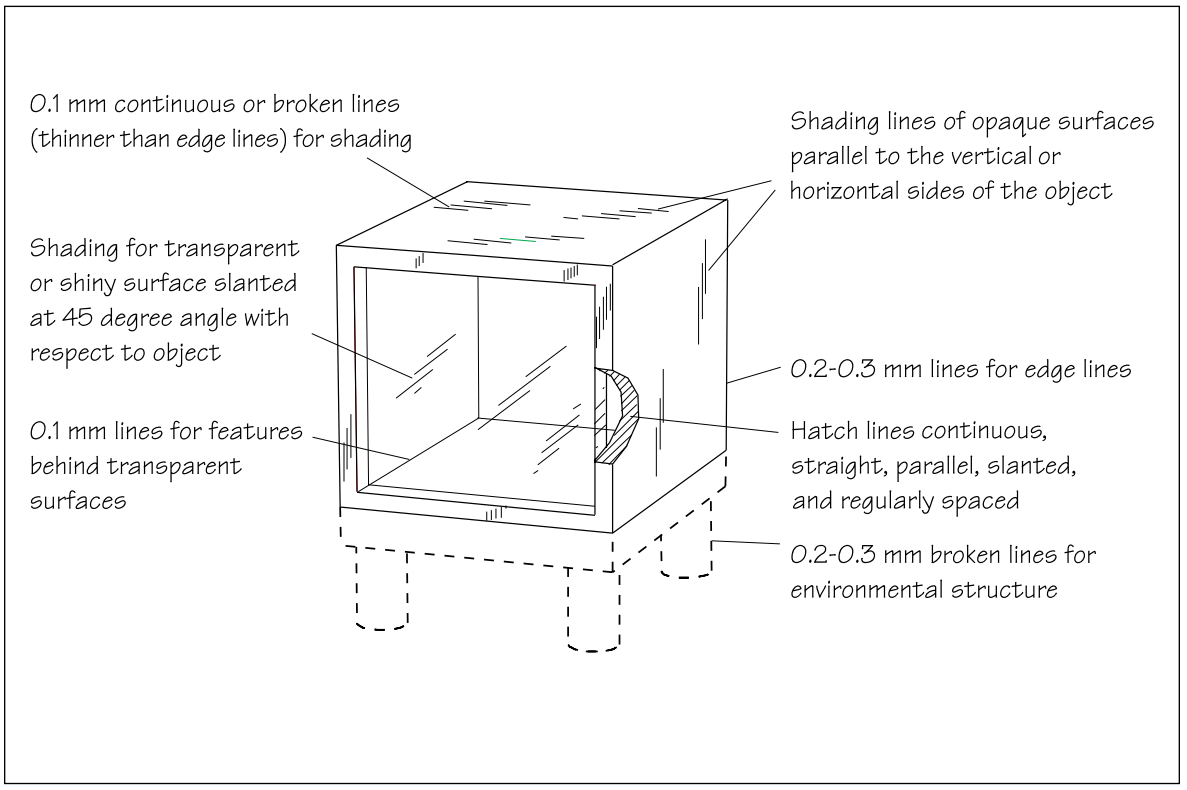


Illustration 7.17—Line Styles and Types in Design Patent Drawings

- Hatch lines in sectional views should be straight, continuous, parallel, slanted lines about 0.1 mm thick. (See Chapter 6 for details on hatching.)

Photographs

Photographs, whether black-and-white or color, can be submitted as informal drawings in design patent applications. Black-and-white photographs are accepted as formal drawings in design patent applications only if the invention cannot be adequately illustrated with black line drawings—for example, on the rare occasions when there is no better means of showing subtle ornamental effects. Similarly, color photos are accepted as formal drawings in design patent applications only if they are the sole practical medium for illustrating the invention. A petition and a petition fee must accompany color drawings; no petition or fee is needed for black-and-white photos. (See Chapter 8 for details on such petitions.) If the petition is not granted, formal black line drawings must be submitted to replace the color photos when the application is allowed. Like black-and-white photos, color photographs are approved only on rare occasions. The PTO discourages photographs because they are difficult and expensive to reproduce. See Chapter 4 for details on patent photography, including its advantages and disadvantages.

Background

All photographs must have a plain background, without anything that is not part of the object. In other words, whatever the photographs show would be considered to be part of the invention. (See Chapter 4 for details on taking photographs of inventions.)

Views Required

The views required in photographs are the same as those required in black line drawings.

Size and Margins

The size and margin requirements for photographs are the same as those for line drawings. (See Chapter 8 for details on size and margins.) Therefore, if a photograph is mounted on cardboard, the cardboard must be one of the acceptable sizes—that is, 8½" × 11" (letter size) or 21 cm × 29.7 cm (A4 size). The photograph must be small enough to leave an acceptable border between itself and the paper, but large enough to show the invention clearly. If a photograph is submitted without the cardboard, the photograph itself must be one of the standard aforementioned sheet sizes.

Figure Numbers

Photographs must be labeled with consecutive figure numbers, such as Fig. 1 and Fig. 2. Photographs not mounted on cardboard must have the figure numbers applied directly on them, which may be difficult, so it is better to mount them on cardboard and have the figure numbers applied on the cardboard. (See Chapter 8 for details on numbering figures.)

Multiple Embodiments

Where multiple embodiments (versions) of a design object are permitted, they may be shown in the same design patent application. Separate figures must be used for each view that shows a different design. For example, assume that the first embodiment of a desk is shown in top perspective, front, back, top, bottom, left, and right side views. The second embodiment of the desk consists entirely of

a unique inlaid pattern on the top; otherwise it is the same in other respects. The second embodiment can thus be shown with just two additional views—a top perspective view and a top view—because the other views would merely be duplicative. The description of the figures showing the second embodiment should state, for example, "Fig. 8 is a top perspective view of a second embodiment of the desk showing an alternative design of the top. Fig. 9 is a top view of the second embodiment of the desk; the other views are duplicative of the views of the first embodiment."

Multiple embodiments of a design object are permitted in one application only if the embodiments have minor variations and the novel and unobvious feature(s) of the design are present in all embodiments. That is, a common inventive concept must be present in every embodiment. If the embodiments have more than just minor variations, the examiner will likely require you to restrict the application to a single invention—that is, to choose one embodiment, and cancel the figures that show the other embodiment. You may argue that the variations are not great enough, or you may accept the requirement. If you accept the requirement, you may either file a divisional (separate) application for the canceled embodiment, or drop it. If you want to file a divisional application you must make it copending with the present application—that is, you must file the divisional before the present application issues or becomes abandoned. (See divisional applications in *Patent It Yourself*, Chapter 14, for details.)